7300 ION

Low Cost 3-Phase Power Meter

7300 ION - With Integrated Display
7300 ION - Tran, With Remote Display

- **Replaces Multiple Analog Meters**
- **Substation Metering**
- **Commercial/Industrial Metering**
- **Demand Monitoring**
- **Genset Applications**

The 7300 ION digital power meter gives you over 100 high accuracy, 3-phase measurements at a price significantly less than analog metering. Compact size, simple installation and high reliability make the 7300 ION ideal for stand-alone metering in panelboards, switchboards, switchgear, gensets and UPS systems.

Additionally, the 7300 ION can be integrated within an energy management network; a variety of models offer features to suit different applications. RS-485 communications provides access to Modbus or our Windows NT and Windows 95-based power monitoring systems. An optical port allows data transfer or energy pulsing. Four digital outputs can be used for energy pulsing or relay control.

Instantaneous Measurements

- Voltage (l-l/l-n), per phase & average*
- Current, per phase & average*
- Real Power, per phase & total*
- Reactive Power, per phase & total*
- Apparent Power, per phase & total*
- Power Factor (lead/lag), per phase & total
- Voltage & Current Unbalance
- Frequency

** in both primary units & meter units.*

Energy

Imported, exported, absolute and net kWh & kVARh. Accumulated kVAh.

Demand

Sliding Window, Predicted, & Thermal Demand on kW, kVAR, kVA, & I average.

Minimums and Maximums

Minimums and maximums are stored for: Voltage (l-l / l-n) per phase, Current per phase, kW, kVAR, kVA, Power Factor, Frequency, & Sliding Window Demand for kW & kVA.

Harmonics

Individual and Total Harmonic Distortion on voltage & current inputs, up to 15th harmonic. K-Factor for current inputs.

NEW!

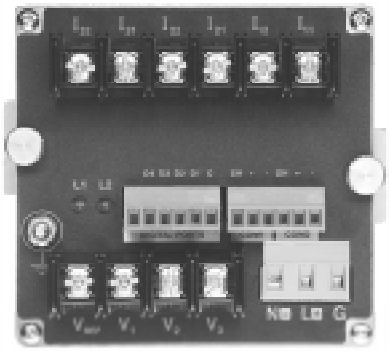
Optional Profibus Port

REVENUE CERTIFIED
Models Available

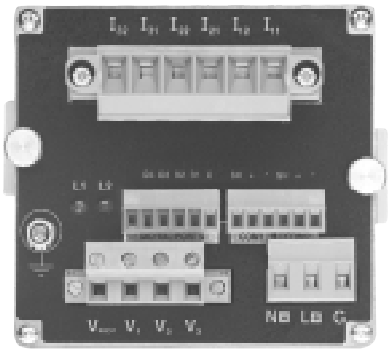
POWER MEASUREMENT

Example Display Formats

Basic Model Rear Panel



Basic Model Rear Panel with CWC Option



Front Panel

The front panel supports local data display and basic setup:

- Easy-to-read LCD with backlighting.
- Adjustable contrast.
- Remote display option up to 1.8 m (6 ft.) from base unit (see front cover).
- Eight data display screens that can be customized to show the parameters of your choice and scrolled manually or automatically.
- Four display formats: 4-parameter small character display to single-parameter large character displays.
- Custom parameter labels (programmable via communications).

Connections & LEDs

The 7300 ION supports 4-wire Wye, 3-wire Delta, and Single Phase systems. It has 3 voltage and 3 current inputs.

- No transducers required.
- No PTs required on the voltage inputs for Wye systems up to 347/600 VAC and Delta systems up to 600 VAC
- Accept CTs with 5 Amp nominal/10 Amp full scale outputs.
- Captured-wire connector (CWC) option.
- All inputs pass the ANSI/IEEE C37.90-1989 surge withstand and fast transient tests.

Residual Current

When set to 4-Wire Wye, the 7300 ION can calculate neutral or ground current based on three phase current measurements.

Digital Outputs

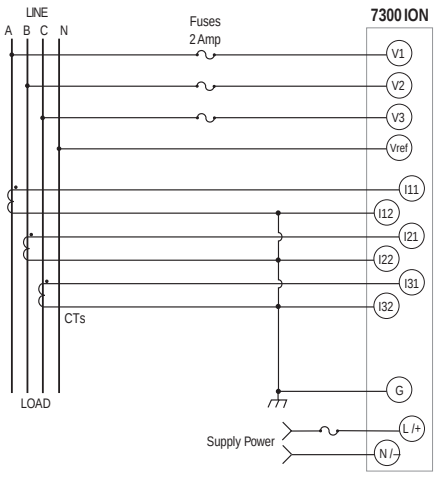
The 4 digital output ports are suitable for pulsing or controlling relays. The operation of each digital output is programmable. The Infrared Data Port can also be used for pulsing or controlling relays.

Rear Panel LEDs

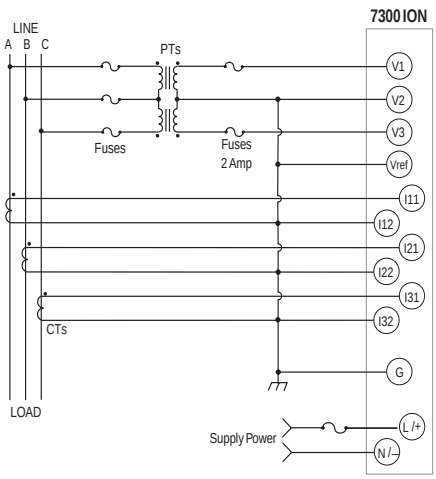
One LED indicates that the unit is operating. One programmable LED can be used for energy (kWh) pulsing.

Example Connections

4-Wire Wye (Direct Connect)



3-Wire Delta (2 PTs and 3 CTs)



Connection to Infrared Data Port

Shown with optional ANSI C12.13 Type II Magnetic Coupler

Communications

RS-485 Port

- Optically isolated
- Baud rates up to 19,200 bps.
- Compatible with Modbus and Power Measurement power monitoring software.

Infrared Data Port

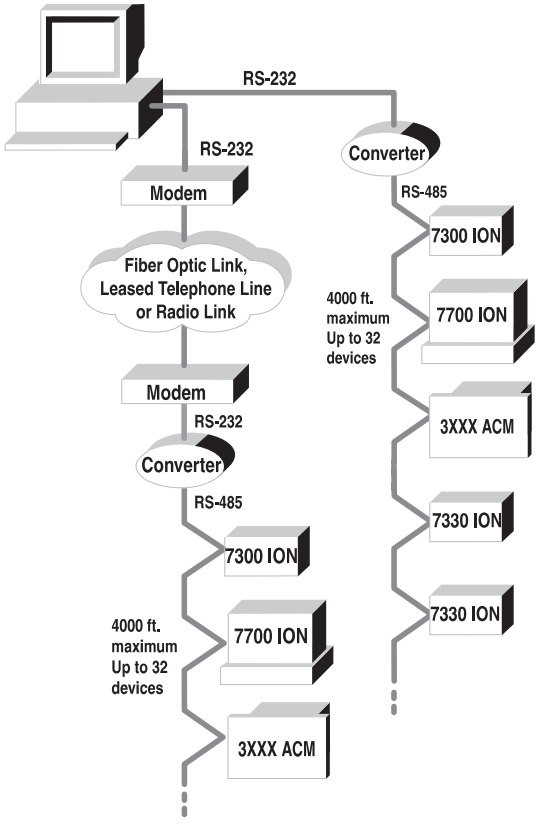
- Compatible with an ANSI C12.13 Type II magnetic optical communications coupler and can operate at baud rates up to 19,200 bps.
- For infrared energy pulsing or communication with Power Measurement power monitoring software.

Ethernet Port (optional)
Available 10Base-T port offers direct access to your 7300 ION via an Ethernet LAN/WAN.

LonWorks Port (optional)
Full LonTalk® support via FTT-10A transceiver.

Profibus Port (optional)
Profibus DP Standard protocol support via sub-D 9 pin female connection

Example Communication Connections



Software Integration

The 7300 ION can be easily integrated within an energy management or SCADA system to provide remote display of all measured parameters at a PC workstation, as well as remote configuration and manual control capabilities. You can use modems with telephone lines, fiber optic and/or radio links. The 7300 ION is compatible with Modbus and with all Power Measurement's Windows NT and Windows 95-based software packages, including PEGASYS™, a fully-networked, client-server based system. PEGASYS supports Power Measurement's 3000-series and 7000-series instrumentation.

The Power of ION

The 7300 ION is based on our revolutionary ION architecture. ION brings the power of object-oriented computer technology to the realm of power instrumentation.
The measurements and other functions of the 7300 ION are provided by *ION modules*. These are not physical modules but virtual modules that exist in internal memory. Each module is a basic building block that performs a specific task; when these modules are linked together, they can perform more complex jobs.

ION Modules
The 7300 ION is equipped with the following ION modules:

Module Type	Quantity
Power Meter	2
Maximum/Minimum	32/32
Integrator	16
Sliding Window/Predicted Demand	16
Thermal Demand	16
Digital Output	5
Pulser	5
External Numeric Control	4
External Boolean Control	8
External Pulse Control	32
Harmonics Analyzer	6
Profibus Slave Module	12

ION® TECHNOLOGY

Measurement Specifications

(@ 50.0 Hz or 60.0 Hz @ 25°C / 77°F)

Note: Accuracy specifications are subject to change. Contact Power Measurement for more information.

Parameter	Accuracy ±(%reading + %FS*)	Display Resolution (%range)	Register Bounds
Voltage(l-n) in Wye, Vab, Vbc in Delta	0.25% + 0.05%	0.1%	0 to $1x10^6$
Voltage(l-l) in Wye, Vca in Delta	0.75% + 0.1%	0.1%	0 to $2x10^6$
Frequency	0.01%	0.01 Hz	40 Hz to 70 Hz
Current	0.25% + 0.05%	0.1%	0 to $1x10^6$
kVA	0.5% + 0.1%	0.1%	0 to $3.3x10^7$
kVAR (>5% F.S.)	1.5% reading	0.1%	0 to ± $3.3x10^7$
kVAh	1.0% reading	0.1% of reading	0 to 10^{38}
kVARh	1.5% reading	0.1% of reading	0 to ± 10^{38}
Power Factor	1.5% reading	0.01	-0.01 to -100.00, 100.00 to 0.01
Total Harmonic Distortion (THD)	1% Full Scale	0.1%	0.01 to 100.00
K-Factor	5%Full Scale	0.1%	0 to $1x10^6$

* %FS= percentage of full scale voltage & current (e.g. 120 VAC / 10 Amp for a 7300 ION -120).

† Resolutions given are from the front panel. Higher resolution can be obtained via communications.

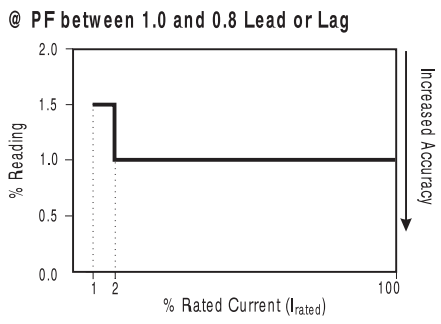
kW and kWh Measurements

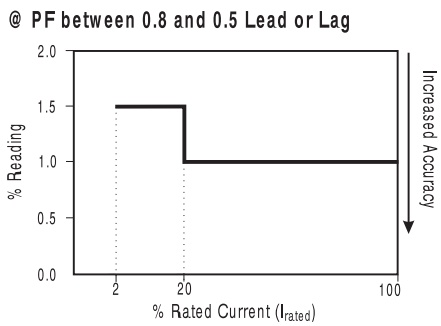
% Rated Current (I_{rated}) & Power Factor (PF)	Accuracy*	Display Resolution†		Range	
		kW (%range)	kWh (%reading)	kW	kWh
@ PF between 1.0 & 0.8 Lead or Lag @ 2% ≤ I_{rated} ≤ 100%	1.0% reading	0.1%	0.1%	0 to ± $3.3x10^7$	0 to ± 10^{38}
@ PF between 1.0 & 0.8 Lead or Lag @ 1% ≤ I_{rated} < 2%	1.5% reading	0.1%	0.1%	0 to ± $3.3x10^7$	0 to ± 10^{38}
@ PF between 0.8 & 0.5 Lead or Lag @ 20% ≤ I_{rated} ≤ 100%	1.0% reading	0.1%	0.1%	0 to ± $3.3x10^7$	0 to ± 10^{38}
@ PF between 0.8 & 0.5 Lead or Lag @ 2% ≤ I_{rated} < 20%	1.5% reading	0.1%	0.1%	0 to ± $3.3x10^7$	0 to ± 10^{38}

*Accuracy specifications comply with IEC 1036 Class 1 specification @ 25°C (77°F) & ANSI C12.16 Class 10.

†Resolutions given are from the front panel. Higher resolution can be obtained via communications.

The following graphs show the accuracy specifications for kW and kWh (@ 25°C / 77°F):





LISTED
Digital Power Monitor 20SJ

Ratings

Voltage Inputs

- 120 Option: 120 VAC nominal full scale input
- 277 Option: 277 VAC nominal full scale input
- 347 Option: 347 VAC nominal full scale input

  All options: 25% overrange; with barrier strip connector rated to 600 Volts line-to-line
- CWC Option: Pluggable captured-wire connectors (available with -120 and -277 options only). Rated to 500 Volts line-to-line
- All Options: Overload withstand for 1500 VAC continuous, 2500 VAC for 1 second non-recurring. Input Impedance: 2 MW

Current Inputs

- 5 Amp nominal / 10 Amp full scale
- Overload withstand: 15 Amps continuous, 300 Amps for 1 second non-recurring
- Input Impedance: 2mW
- Worst Case Burden (@ 10 Amps): 0.0625 VA

Power Supply

- Basic: 85 to 240 VAC (20 to 440 Hz) / VDC (±10%), 0.5 Amp worst case loading (20 W) @ 100 VAC @ 25°C (77°F)
- P24 option: 20 to 60 VDC (±10%), 1 Amp worst case loading (10 W)

Temperature

- Display: 0°C to +50°C (+32°F to +122°F) ambient air
- Base unit: -20°C to +50°C (-4°F to +122°F)
- Storage: -30°C to +70°C (-22°F to +158°F)

Humidity

- 5% to 95% non-condensing

Digital Outputs

- 4 Optically Isolated Digital Outputs
- Maximum Forward Current: 80mA
- Maximum Voltage: 30V

Standards Compliance

- UL: Certified to UL 3111
- CSA: No.142-M1987
  CAN/CSA C22.2 No.1010-1
- IEC 1010-1
- Surge Withstand: All inputs pass ANSI/IEEE C37.90-1989 surge withstand and fast transient tests
- FCC: Part 15 of FCC Rules for a Class A Digital Device
- CE marked

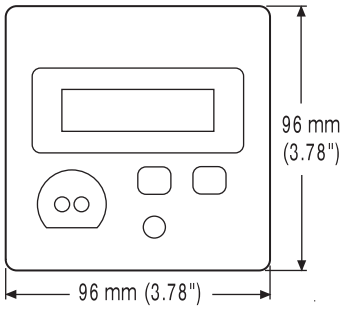
Mounting

The mounting requirements of the 7300 ION depend on the model:

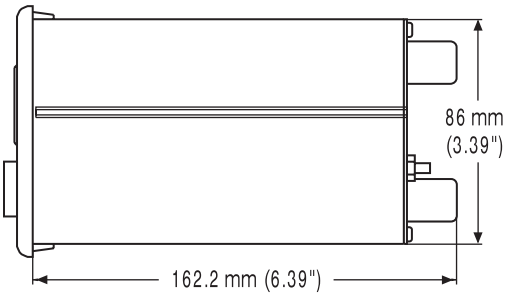
- Basic and DISPLAY models have an integrated display and fit in a DIN standard 92 mm x 92 mm (3.6 in. x 3.6 in.) panel cutout, secured by sliding clamps tightened by thumbscrews.
- TRAN models have no display and can be flush-mounted against any flat surface. Optional DIN rail mount is also available.
- The RMD module has a base unit and remote display. The base unit can be mounted against any flat surface (optional DIN rail mount also available). The remote display can be panel mounted in a DIN standard cutout up to 1.8 m (6 ft.) from the base unit. Standard panel punches can be purchased off-the-shelf. Contact Power Measurement for sources.

Basic and DISPLAY Models

Front View



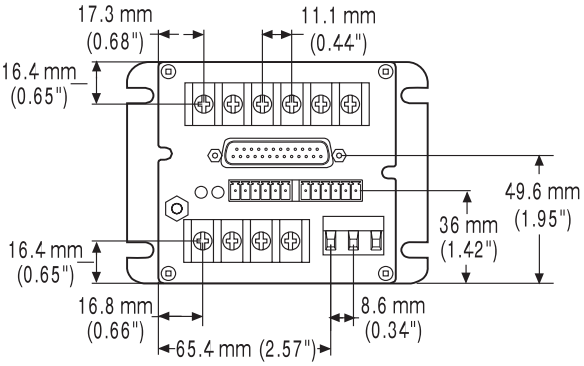
Side View



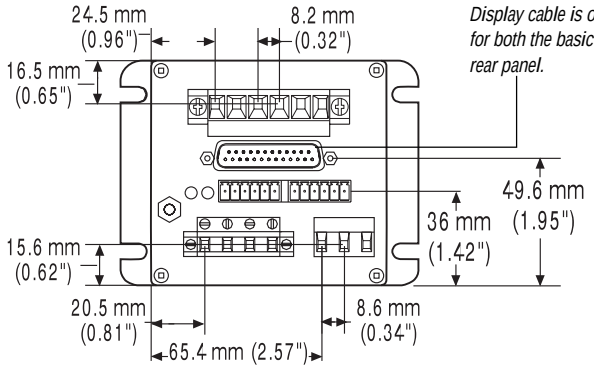
Add 25 mm (1.0") for CWC option.

Basic Model Rear Panel

With Barrier Strip Connectors



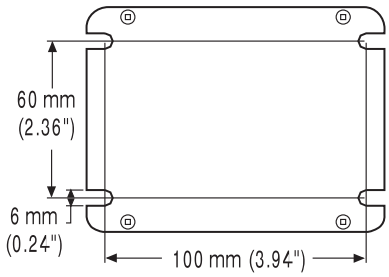
With CWC (Captured Wire Connectors) Option



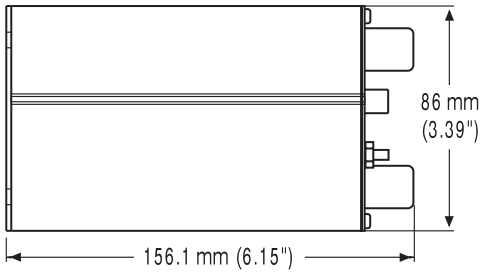
Display cable is optional for both the basic and CWC rear panel.

TRAN and RMD Models

Base Unit Front View

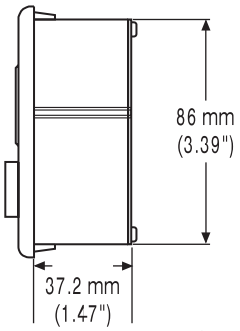


Base Unit Side View



Add 25 mm (1.0") for CWC option.

Remote Display Side View



Add 76 mm (3.0") for cable connection.

Meet the
World Leader

For over two decades, Power Measurement has been providing cost-effective power monitoring, analysis, and control systems to customers around the globe including power utilities, commercial and industrial facilities, and major electrical OEMs. Let our experience and proven track record give you an end-to-end energy management solution that exceeds your expectations.

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Officially Registered

ISO 9002 INTERNATIONAL QUALITY ASSURANCE STANDARD

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Ordering Information

Model	Display			Infrared Data Port	RS-485 CommPort	Digital Outputs	Barrier Strip for Voltage & Current
	Integrated	Remote	No Display				
7300 ION	√			√	√	5	√
7300 ION -DISPLAY	√			√		1	√
7300 ION -TRAN			√		√	4	√
7300 ION -RMD		√		√	√	5	√

Meter Options

One of these three options must be specified when ordering:

-120 To monitor 69/120, 120/208 (3-phase) or 120/240 Volt (single phase) systems

-277 To monitor 240/415, or 277/480 Volt (3-phase) systems

-347 To monitor 347/600 Volt (3-phase) systems

One of these two options must be specified when ordering:

-50Hz Optimized for 50 Hz systems

-60Hz Optimized for 60 Hz systems

These options are not compulsory:

-MAN-7300-ENG Comprehensive User Manual

-CWC Pluggable captured-wire type connectors for Voltage and Current inputs. Available with -120 or -277 options only

-TROP Tropicalization (conformal coating) treatment

-DRM DIN rail mount (available for the TRAN and RMD models only)

-RMD Remote Modular Display (for ordering remote display module separately to add to an existing TRAN unit)

-MOD Preset to Modbus Communications (TRAN Models only)

-ETH 10 Base-T Ethernet Port

-P24 20 to 60 VDC power supply option

-RAP Round Adapter Plate: install a 7300 ION Basic, Display or RMD model into an existing round (ANSI) cutout.

-LON FTT-10A port for LonTalk protocol

-PROFIBUS Sub-D 9 pin female connection for Profibus protocol (may not be ordered in conjunction with TRAN, ETH or LON options)

Other Items

-REB Relay Extension Board. May be populated with a maximum of four relay modules. P240 VAC/VDC universal power supply included.

-REB-P24/48 Relay Extension Board with 20-60VDC to 5VDC power supply in place of P240 VAC/VDC power supply.

Digital Output Devices

GDOAC120 120 VAC, 3.5A, N.O. Solid State Relay

GDOAC120MO 120 VAC 3.5 A, N.O. Solid State Relay with Manual Override

GDOAC240 240 VAC, 3.5A, N.O. Solid State Relay

GDOAC240MO 240 VAC 3.5 A, N.O. Solid State Relay with Manual Override

GDODC200 200 VDC, 1.0A, N.O. Solid State Relay

GDODC60 60 VDC, 3.5A, N.O. Solid State Relay

GDODC60L 60 VDC, 3.5A, Low Leakage, N.O. Solid State Relay

GDODC60MO 60VDC 3.5 A, N.O. Solid State Relay with Manual Override

Ordering Example

This example specifies a 7300 ION -TRAN model for use with 347/600 Volts @ 60 Hz systems:

7300ION -TRAN -347 -60Hz

Warranty

Three year limited parts and labour,
FOB Saanichton, B.C., Canada

QMI REGISTERED • QUALITY • SYSTEM

ISO 9002-94
Registration
Cert # 002188

YOUR LOCAL
REPRESENTATIVE